UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/637,078	08/11/2000	Erik R Altman	YOR9-2000-0415US1 (8728-4	8733

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EXAMINER
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ART UNIT	PAPER NUMBER
2124	6

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/637,078	ALTMAN ET AL.
	Examiner	Art Unit
	William H. Wood	2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2003* .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

    4a) Of the above claim(s) *2* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Claims 1-42 are pending (claim 2 canceled) and have been examined by Examiner

William H. Wood.

Drawings

1.   The drawings submitted 28 July 2003 were approved by the draft person.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claims 17-21 rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claim 17 recites the limitation "profile matrix" in line

3 of the claim. In the following rejections the term will be treated as "memory array".

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1, 4-5, 9-12, 16-17, 22, 23, 25-26, 30-33 and 37-39 are rejected under 35

U.S.C. 102(b) as being anticipated by **Argawal** (USPN 5,768,500).

In regard to new limitations of claim 1 and 23, *assisting compilation of the computer program, based upon the profile counts stored in the memory array* (column 2, lines 3-6; and column 2, lines 47-55).

In regard to claim amended claim 16, **Agrawal** disclosed the limitation *further comprising the step of supporting read operations from the memory array in an off-line optimization of the program* (column 2, lines 52-58 and column 2, line 66 to column 3, line 26).

In regard to claim 17, **Agrawal** disclosed the limitation *further comprising the step of assisting optimization of the program, based upon the profile counts stored in the profile matrix* [memory array] (column 2, lines 47-55; and column 2, lines 3-6).

In regard to new claim 39, **Argawal** disclosed the limitation *further comprising wherein the computer processing system assists optimization of the computer program, based upon the profile counts stored in the memory array* (column 2, lines 3-6).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 3, 6-8, 13, 15, 24, 27-29 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Argawal** (USPN 5,768,500) as applied above and in view of **Record** (USPN 5,355,484).

8.   Claims 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Agrawal** et al. (USPN 5,768,550) as applied above under claim 17 and in view of **Bala** (USPN 6,351,844).

9.   Claims 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ammons** et al., "Exploiting Hardware Performance Counters with Flow and Context Sensitive Profiling".

In regard to new claim 40, **Ammons** disclosed the limitations:

- *A method for profiling computer program executions in a computer processing system having a processor and a memory hierarchy* (page 85, Abstract and right column; UltraSPARC), *comprising the steps of:*
  - *executing a computer program* (page 85, Abstract); *and*
  - *wherein profile information associated with the profile counts describes a typical execution path of the computer program* (page 86-88, section 2; page 88-89, section 3)

Ammons did not explicitly teach *storing, in a memory array, profile counts* (**Ammons**: page 85-86, section 1) *for events associated with the execution of the computer*

program, the memory array being separate and distinct from the memory hierarchy so

as to not perturb normal operations of the memory hierarchy. Official Notice is taken

that it was known at the time of invention to implement systems with additional memory.

It would have been obvious to one of ordinary skill in the art at the time of invention to

implement the profiling system of **Ammons** with an array of memory for storing the

profiling counts. This implementation would have been obvious because one of

ordinary skill in the art would be motivated to provide a memory dedicated to the

processor's counters thus increasing speed by not having to manipulate other more

distant memory.

In regard to claim 41, **Ammons** disclosed the limitation *further comprising the step of*

optimizing the computer program during at least one of static and dynamic compilation

using the profile information (page 85, left column, last paragraph).

In regard to claim 42, **Ammons** did not explicitly state the limitation *wherein the memory*

array is arranged as a two-way set associative array. Official Notice is taken that it was

known at the time of invention to make use of a two-way set associative array. It would

have been obvious to one of ordinary skill in the art at the time of invention to implement

the memory of **Ammons'** system with a two-way set associative array as is well known

in the art. This implementation would have been obvious because one of ordinary skill

in the art would be motivated to provide memory in a standard format, which is easily

understood and thus implemented.

Response to Arguments

10. Withdrawn are the claim objections of the previous office action mailed 25 April 2003.

11. Withdrawn are the claim rejections under 35 U.S.C. 112 second paragraph for claims 32-33, 35-36 and 16 of the previous office action mailed 25 April 2003.

12. As it appears to be the original Examiner's intent to reject claim 17 under 35 U.S.C. 102, the claim has been rejected as such. Furthermore, the amendments to the claim appear to be inline with this conclusion as well.

13. Previous rejections of Office Action mailed 25 April 2003 are maintained. The complete reasoned statements are not repeated for brevity.

14. Applicant's arguments filed 28 July 2003 have been fully considered but they are not persuasive. Applicant argued: [a] **Agrawal** does not teach or suggest "profiling computer program executions"; [b] **Agrawal** fails to teach "assisting *compilation* of the computer program"; and [c] there is no motivation to combine **Agrawal** and **Bala**. The prior art of record does not support this argument. First, **Agrawal** does in fact teach profiling computer program executions. The broadest reasonable interpretation of the phrase, "profiling computer program executions", does not in any way limit out recording memory statistics. In fact, **Agrawal** is executing programs in order to perform a profile of, for example cache misses. Clearly, **Agrawal** profiles computer program executions in that programs are executed and profiled by storing information about the memory operations. Additionally, **Agrawal** (column 1, line 66 to column 2, line 2) directly states

profiling processes, procedures and so on (in other words program executions).

Second, upon analysis of the prior art, it is clearly apparent, that **Agrawal** does actually

disclose assisting compilation of the computer program (column 2, lines 3-6). **Bala**

disclosed compilers (column 1, lines 10-26). Third, **Agrawal** and **Bala** are combinable

for at least the fact that the two are useful for optimization of code. Having addressed

all of the outstanding issues in consideration of the prior art of record, the broadest

reasonable interpretation of Applicant's currently claimed invention is neither novel nor

non-obvious.

Conclusion

15.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

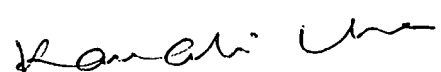than SIX MONTHS from the date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (703)305-3305. The examiner can normally be reached 7:30am - 5:00pm Monday thru Thursday and 7:30am - 4:00pm every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-7239 for regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

William H. Wood
October 9, 2003

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